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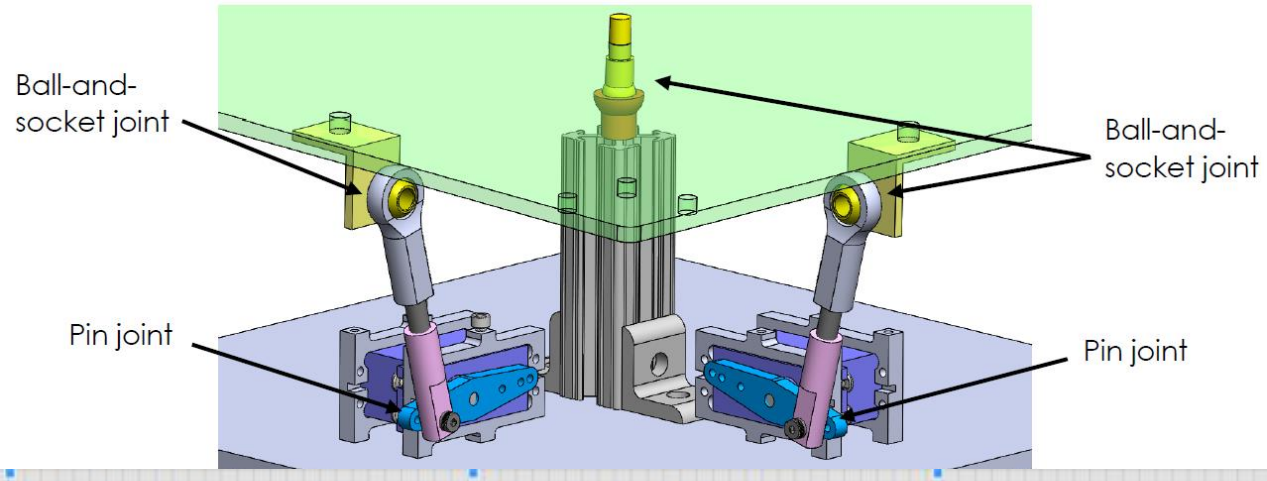
Ball on Plate—Control & Navigation
Levitating Ball Feedback Control
Cake Cutter
Four-bar Viewer Matlab App
SolidWorks Certificate
LabView Certificate

Ball on Plate—Control & Navigation



BALL ON PLATE CONTROL & NAVIGATION

1 - Verify source image and ROI:

320x240 1.36X 32-bit RGB image 138,119,125 (301,20)

2 - Select control mode:

Point-to-Point | Circle Path | Figure 8 Path | Square Path

Input desired location for ball, from (-50,-50) to (50,50):

Desired X Coordinate: 0

Desired Y Coordinate: 0

3 - Turn PID control ON/OFF and verify servo-motor output:

PID

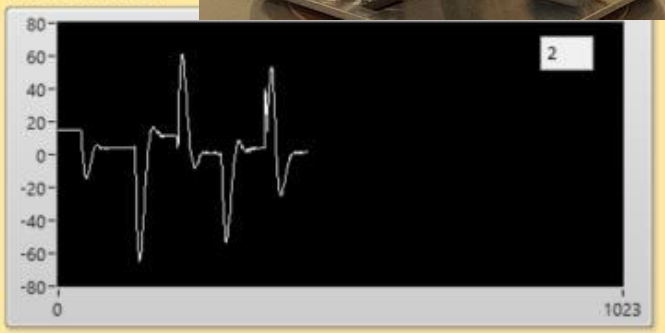
X Output

Y Output

Nb Circles (Circle Detection 1): 1

Stop VI

Ball X Position



Ball Y Position

Scott Hallock, Nicole Rahal,
Brandyn Nishida, Kenny Hwang

Ball on Plate—Control & Navigation

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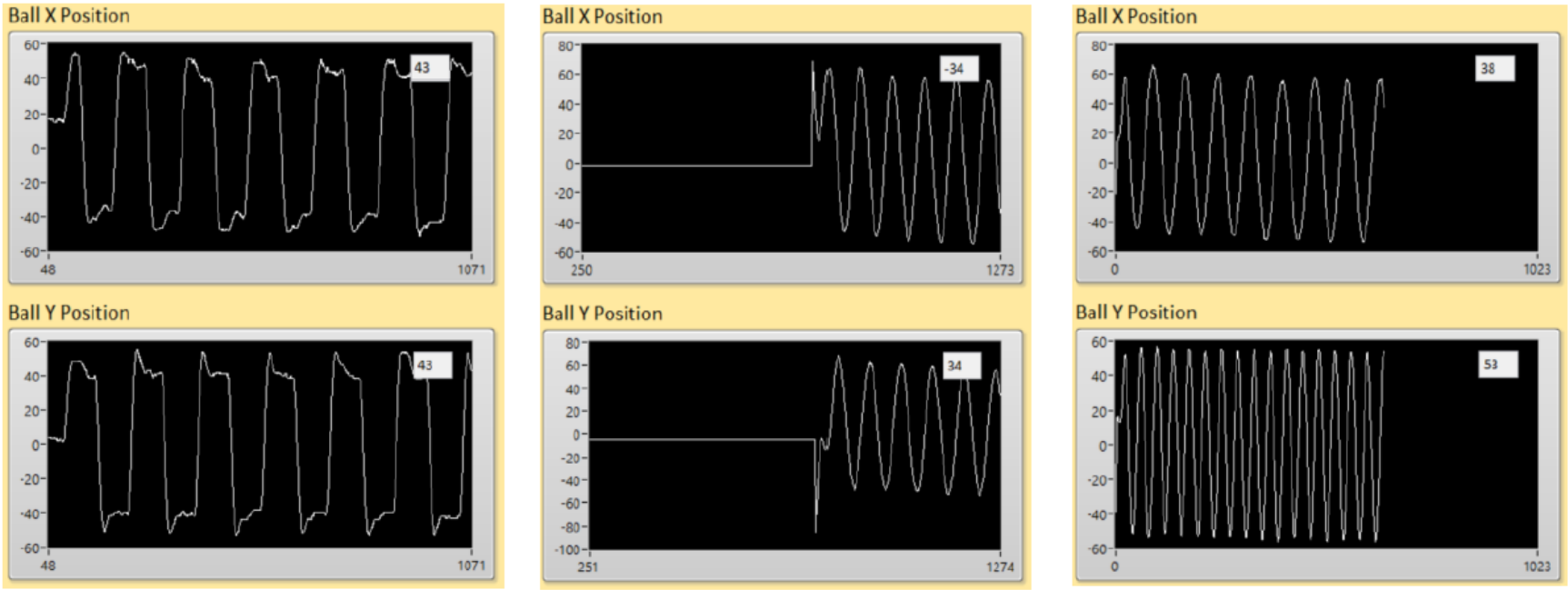

Figure 6 - From left to right: Square ball path, Circle ball path, and Figure-8 ball path.

Link to video

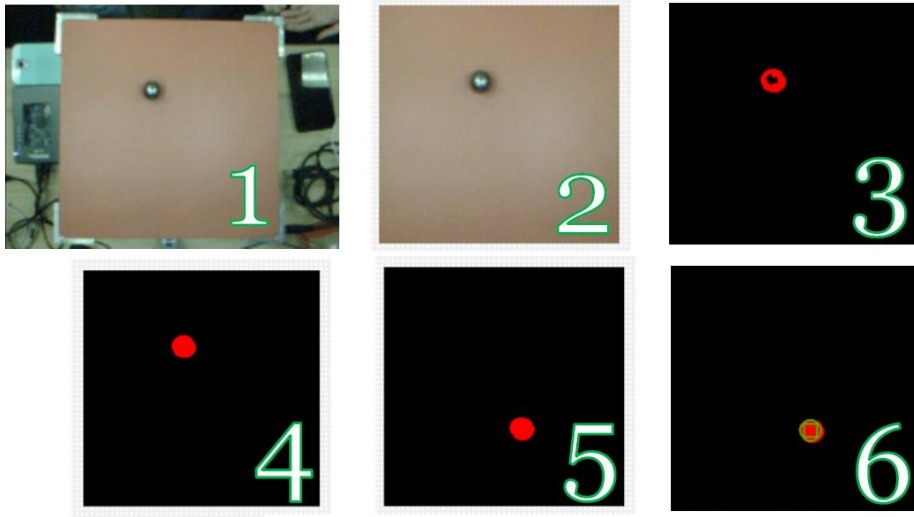

Image processing in Vision Assistant

Levitating Ball Feedback Control

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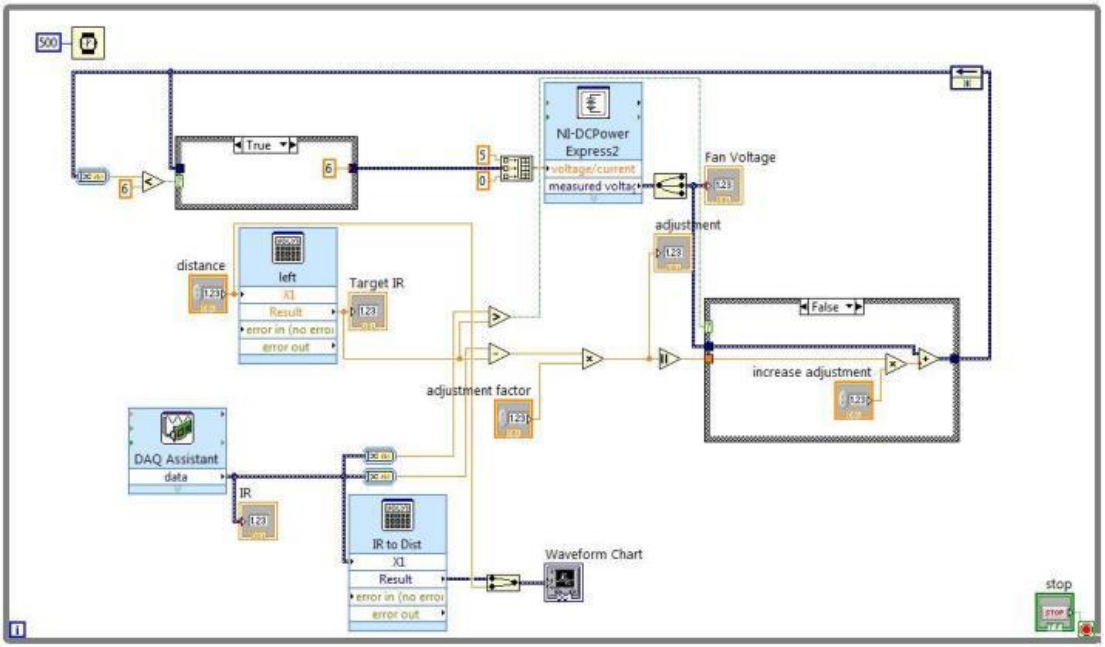

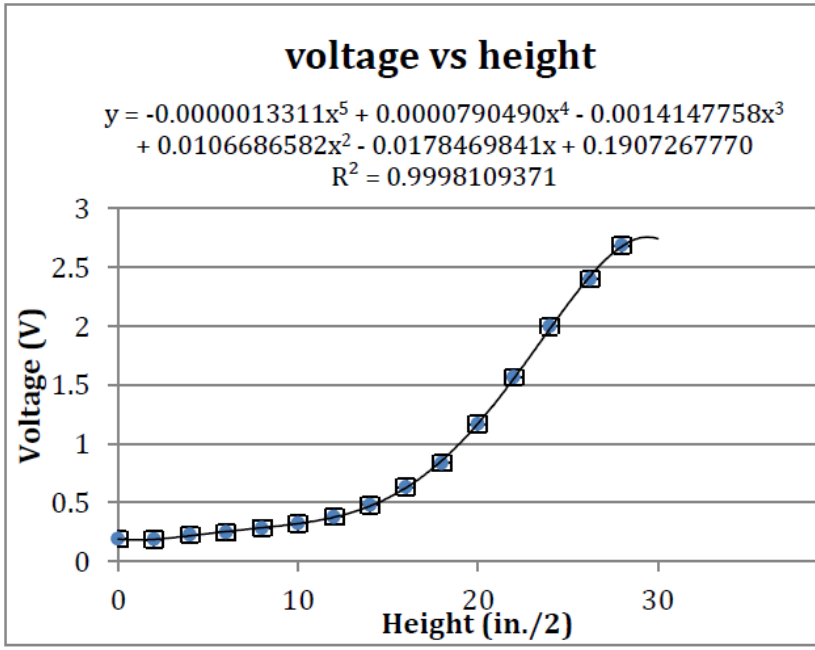

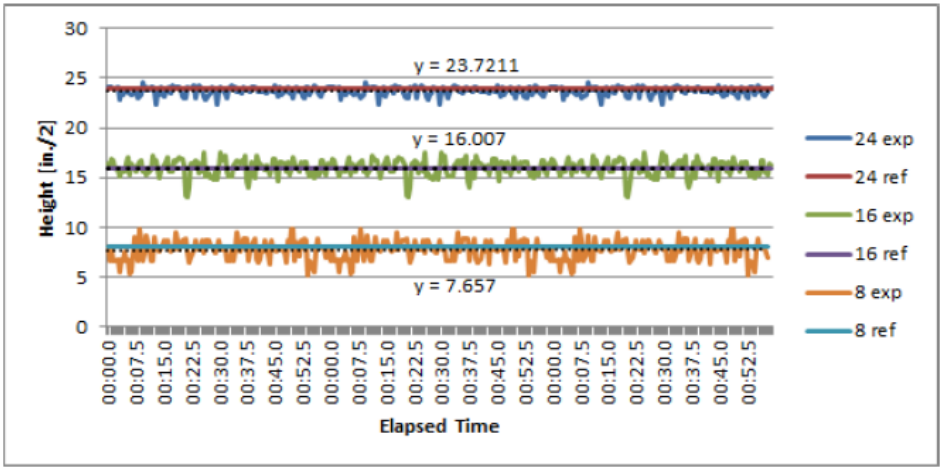

Figure 5: Steady state tests at heights of 8, 16, and 24 [in./2]. The equations show a linear fit of experimental height.

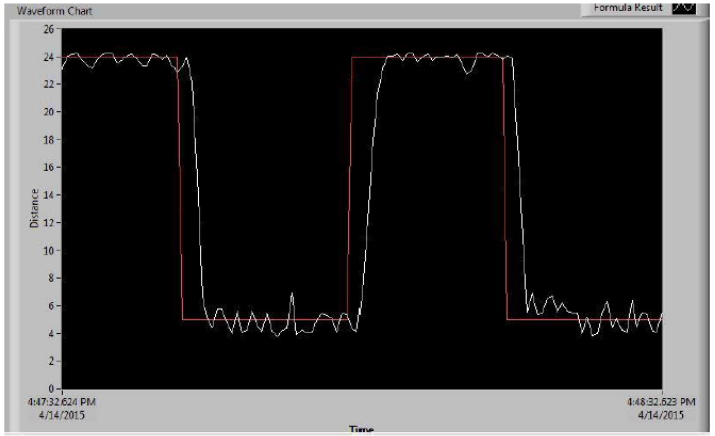

Figure 6: Dynamic test varying between distances of 24 and 5 [in./2]. (Distance is measured from the bottom of the apparatus to the ball in this figure.)

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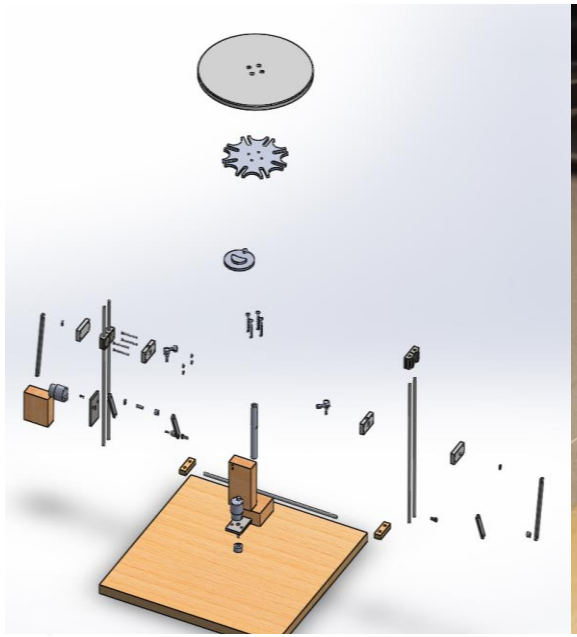
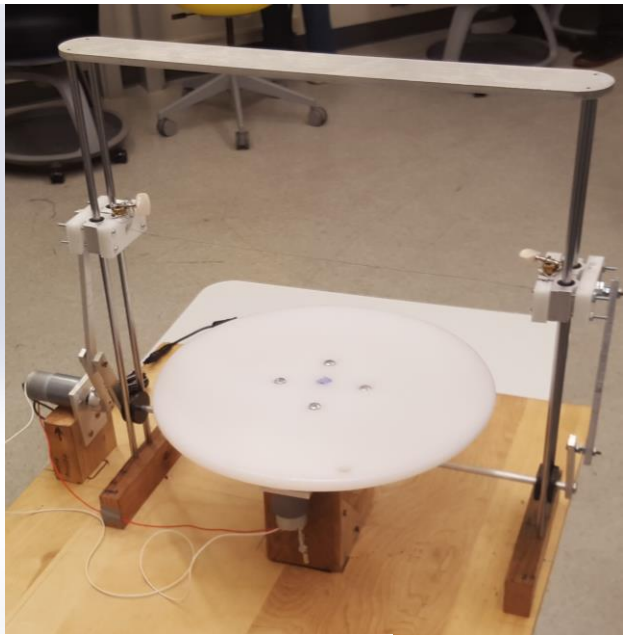
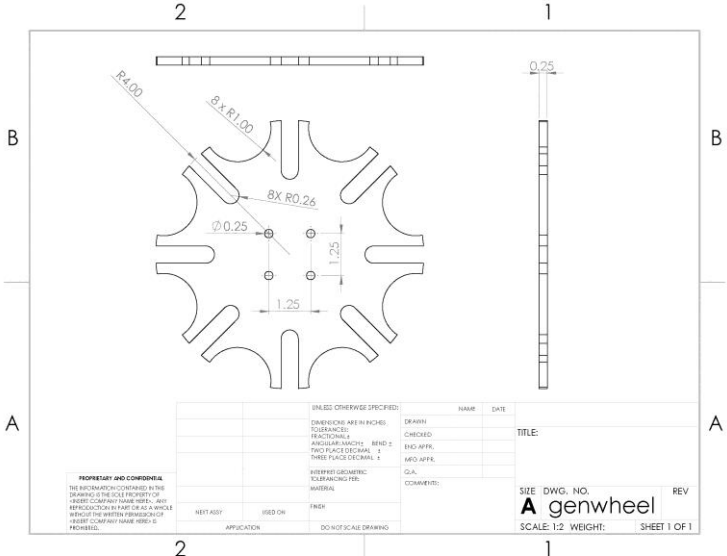
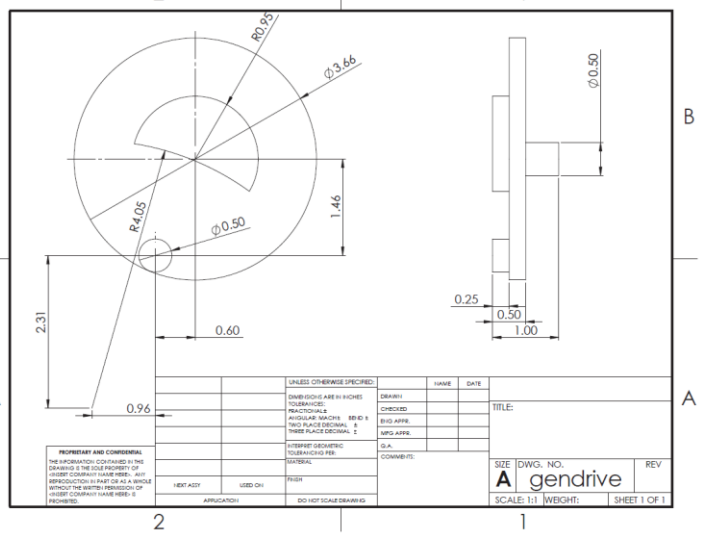
Cake Cutter

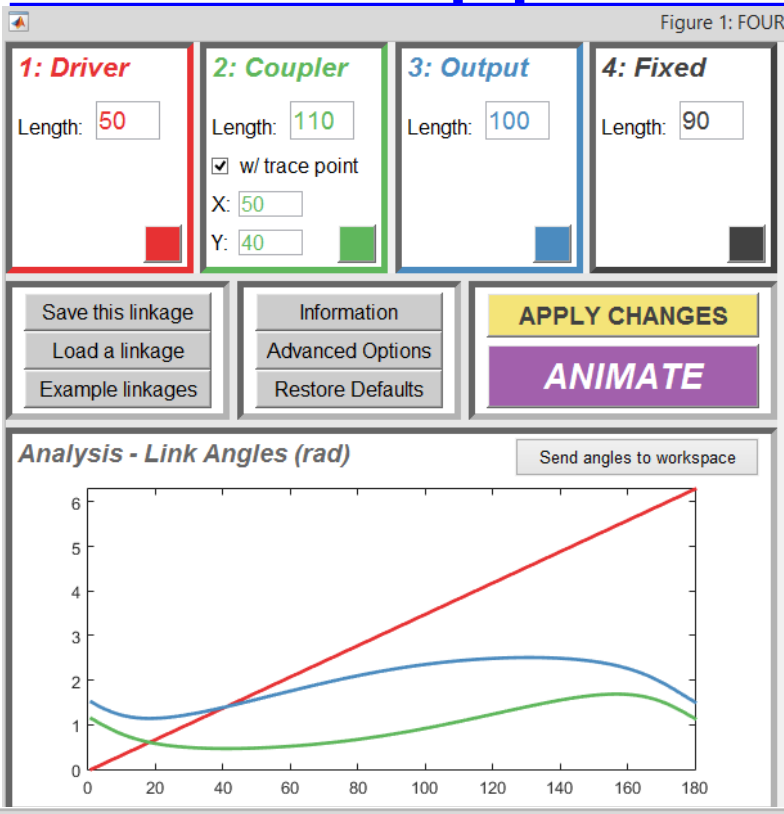


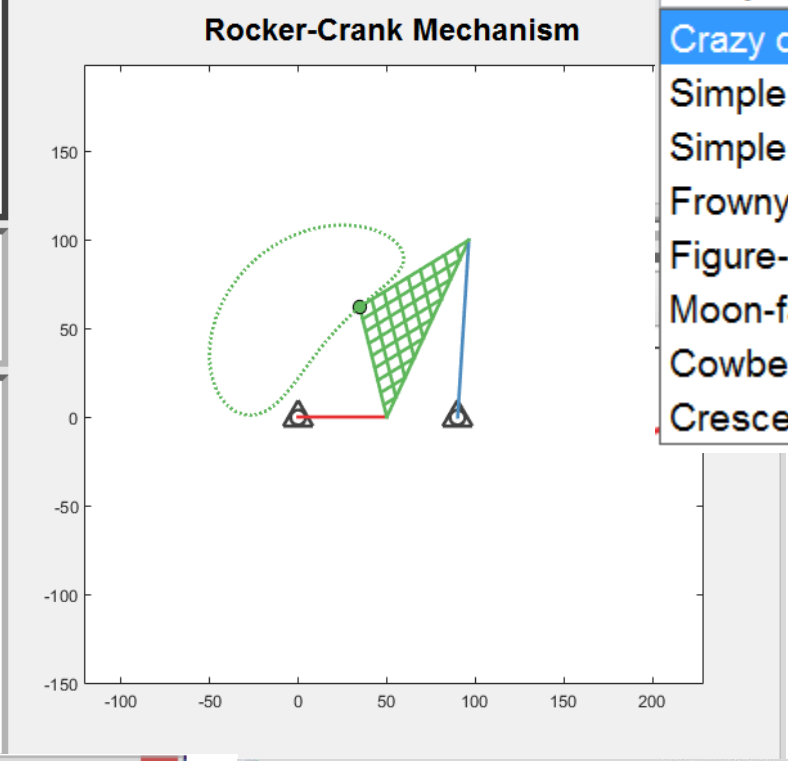


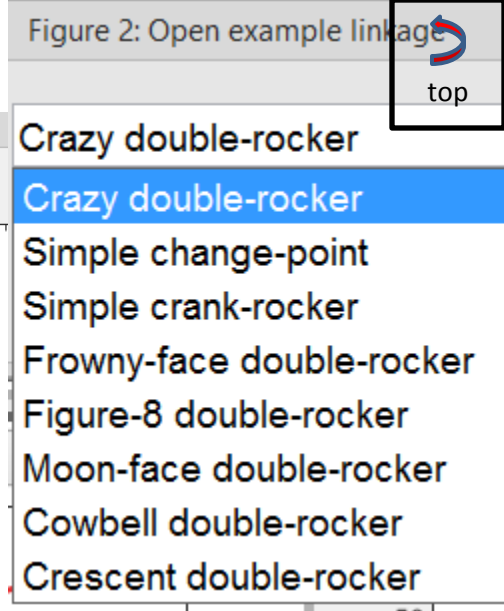


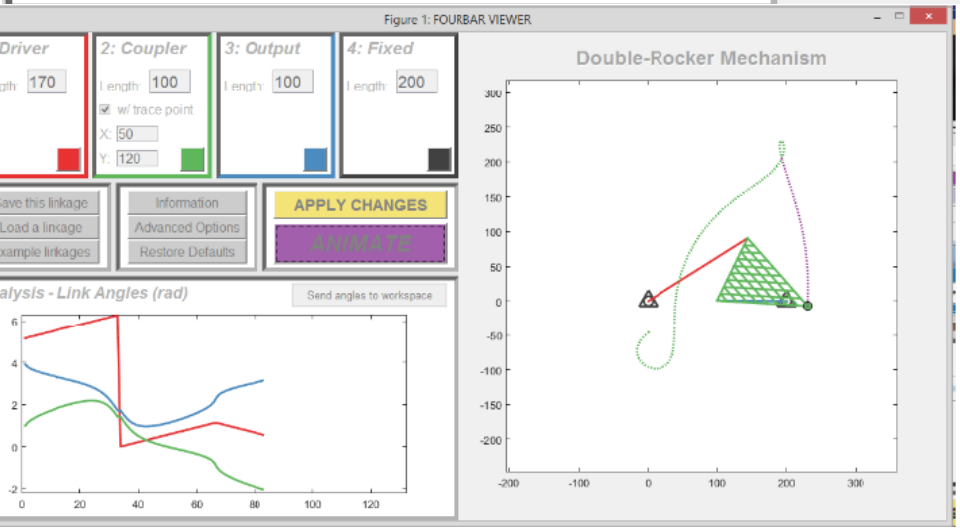


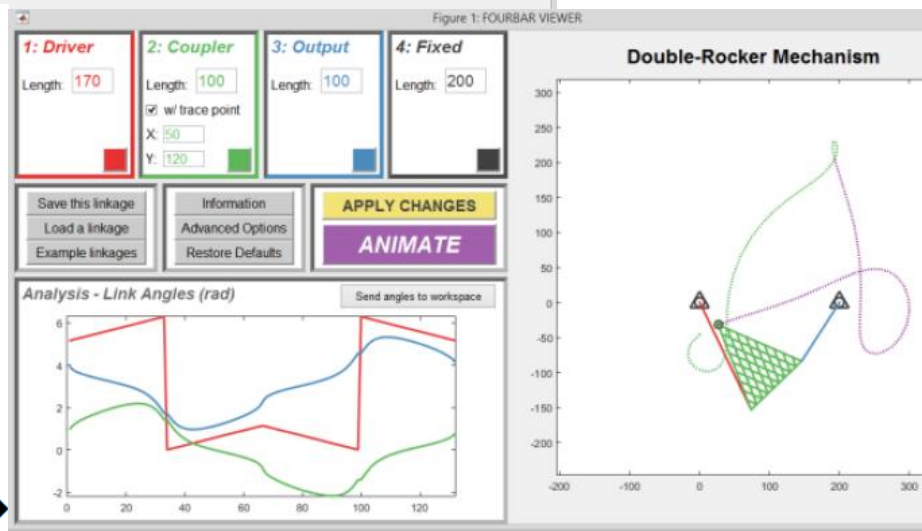
Matlab App: Four-bar Viewer











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CERTIFICATE

CERTIFIED ASSOCIATE

ASSOCIATE Mechanical Design SOLIDWORKS

This certifies **KENNETH HWANG**

has successfully completed the requirements for

SolidWorks Associate - Mechanical Design

and is entitled to receive the recognition

and benefits so bestowed

AWARDED on December 13 2013

Academic exam at University of California Berkeley

C-H6EGRCVE4K

Bertrand SICOT
CEO SOLIDWORKS

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Serial Number: 100-316-12050
Issue Date: 4/20/2016
Expiration Date: 4/19/2018

NI CUSTOMER EDUCATION

Certification

Kenneth Christopher Hwang

Has successfully completed all requirements and is now granted the title of:

NATIONAL INSTRUMENTS
LabVIEW
CERTIFIED ASSOCIATE DEVELOPER

James J. Truchard
President and CEO
National Instruments

NATIONAL INSTRUMENTS